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RECORD OF DECISION
PHASE I - REMEDIAL ALTERNATIVE SELECTION

Site: Drake Chemical Site, Lock Haven, Pennsylvania

Documents Reviewed

I am basing my decision principally on the following documents describing the analysis of cost effectiveness and feasibility of remedial alternatives for Phase I (Leachate Stream Area) for the Drake Chemical site:

- "Remedial Investigation Report (Phase I) Leachate Stream Area" Volumes I and II, Drake Chemical Site, Lock Haven, Clinton County, Pennsylvania (NUS Corporation, July 1984).
- "Feasibility Study (Phase I) Leachate Stream Area," Drake Chemical Inc. Site, Lock Haven, Clinton County, Pennsylvania (NUS Corporation, July 1984).
- EPA's Environmental Response Team "Extent of Contamination Study" report (April 1982).
- "A Toxicological Impact Assessment of the Drake Chemical Site" (NUS Corporation May 1983).
- Staff summaries and recommendations.
- Recommendations by the Pennsylvania Department of Environmental Resources.

Description of Selected Remedy

- Covering of upper reach of leachate stream with natural soils, capping with clay and grading to contours of surrounding land for surface water management.
- Partial excavation of contaminated sediments and construction of a conduit drain in lower reach of leachate stream.
- Installation of a granular drain at toe of railroad embankment.
- Temporary disposal of excavated sediments in storage facility constructed on-site.
- Operation and maintenance for Phase I consists of visual inspection of the area on a semi-annual basis. Possible repair to cap if necessary, subsequent to visual inspection.

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Declarations

Consistent with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), and the National Contingency Plan (40 C.F.R. Part 300), I have determined that the stream remediation actions described above together with temporary on-site disposal for the excavated sediments is a cost-effective remedy and provides adequate protection of public health, welfare and the environment. The remedial action eliminates the possibility of direct public contact with contaminated materials in the leachate stream and is generally consistent with anticipated subsequent remedial actions at the site. The remedial action will be designed so as not to alter local flood stages or otherwise impact the floodplain. A floodplain assessment will be performed prior to any further remedial action at the site. The State of Pennsylvania has been consulted and agrees with the approved remedy. In addition, the action will require future operation and maintenance activities to ensure the continued effectiveness of the remedy. These activities will be considered part of the approved action and eligible for Trust Fund monies for a period of six months.

I have determined that the action being taken is appropriate when balanced against the availability of Trust Fund monies for use at other sites.

9/30/84
Date

Lee M. Thomas
Assistant Administrator
Office of Solid Waste and Emergency Response

Summary of Remedial Alternative Selection
Drake Chemical Site - Phase I

Site Location and Description

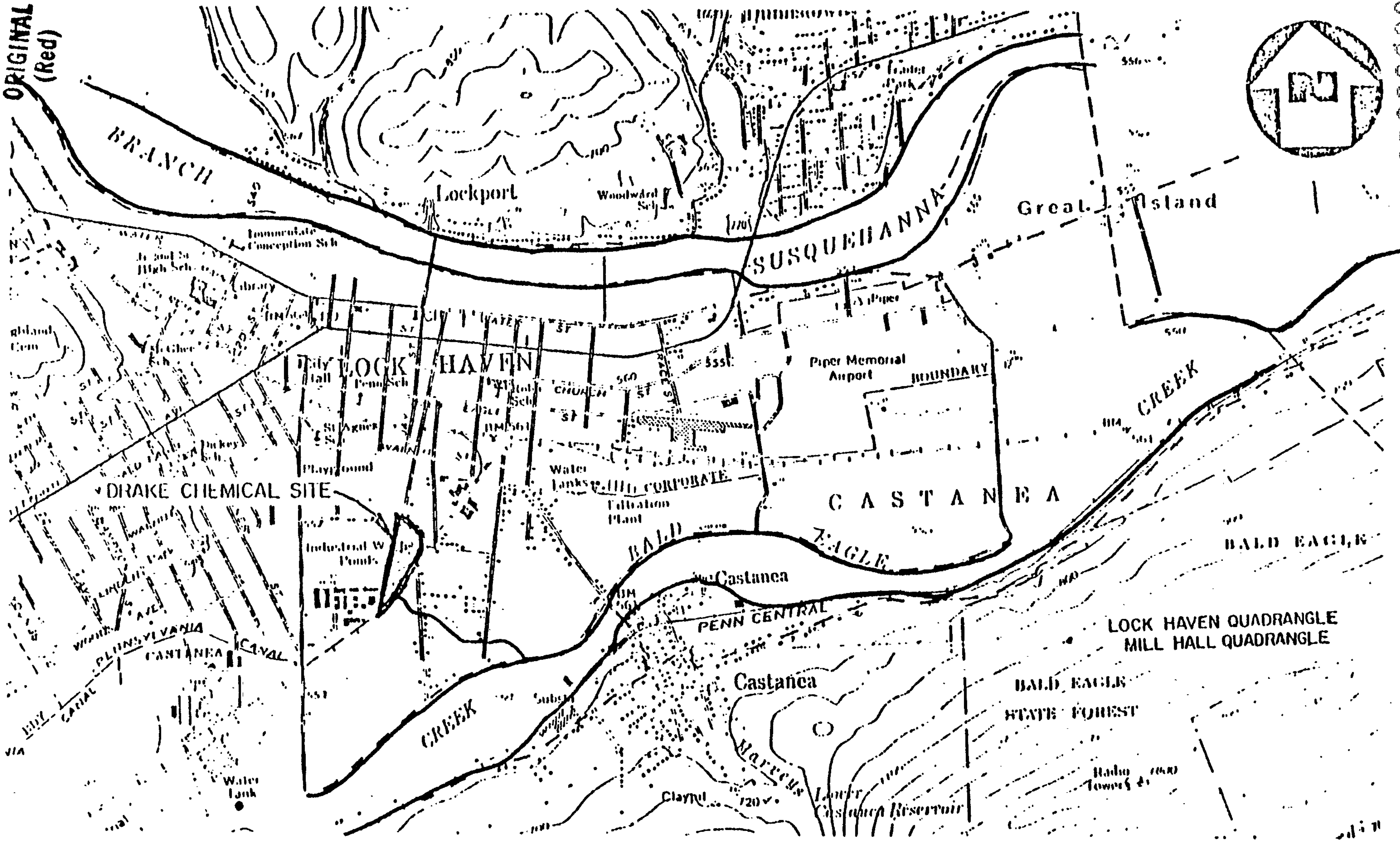
The Drake site is located in Lock Haven, Clinton County, Pennsylvania (Figure 1). The eight-acre site, no longer active, contains six major buildings including former offices, production facilities and a wastewater treatment building. Also on the site are two lined wastewater treatment lagoons, an unlined sludge lagoon and an unlined liquid lagoon. Chemical sludge covers much of the open area on site. Drums and bulk waste may also be buried on-site. Construction debris is strewn about the site (Figure 2). All of the above will be addressed in Phase II of the Drake Feasibility Study.

It was determined that in order to expedite the remediation of the leachate stream, which poses the greatest threat of direct contact to the public, a phased approach should be implemented. The phased approach would allow design and construction work to proceed for Phase I while remedial alternatives were still being developed for the more technically complex Phases II and Phase III which deal with on-site soil contamination and regional groundwater contamination, respectively.

Of concern for this record of decision document is the "leachate stream" which runs off-site from the railroad embankment to Bald Eagle Creek (Figure 3). From the embankment, the stream flows south for approximately 1600 feet before discharging into Bald Eagle Creek. During the course of the flow, the stream passes through conduits under Pine Street, U.S. Route 220, a conduit in Castanea Township Park, and the Park Road. Adjacent to the property (within 1/4 mile) is a large apartment complex (inhabited mostly by senior citizens), a large shopping center, and a municipal park. Lock Haven University, elementary schools, and several churches are located within a one-mile radius of the site. Bald Eagle Creek is located less than 1/2 mile south of the site and the West Branch of the Susquehanna River is located approximately 3/4 mile north of the site.

Site History

Drake Chemical, Inc. purchased the site in 1962. The early history of production at Drake Chemical, Inc. is unclear, but the site had been involved for many years in the manufacture of small batches of specialty intermediate chemicals for producers of dyes, pharmaceuticals, cosmetics, textiles, plant additives, and pesticides. These products were synthesized using the process of sulfonation, amination, chlorination, and cyanation. Most processes at Drake Chemical were never highly automated and



DASE MAP IS A PORTION OF THE U.S.G.S. LOCK HAVEN, PA. QUADRANGLE (7.5 MINUTE SERIES, PHOTO REVISED 1973), AND THE MILL HALL, PA. QUADRANGLE (7.5 MINUTE SERIES, 1965). CONTOUR INTERVAL 20', EXCEPT AS NOTED.

LOCATION OF DRAKE CHEMICAL, INC.

LOCK HAVEN, CLINTON COUNTY, PA.

SCALE: 1" = 2000'

FIGURE 1

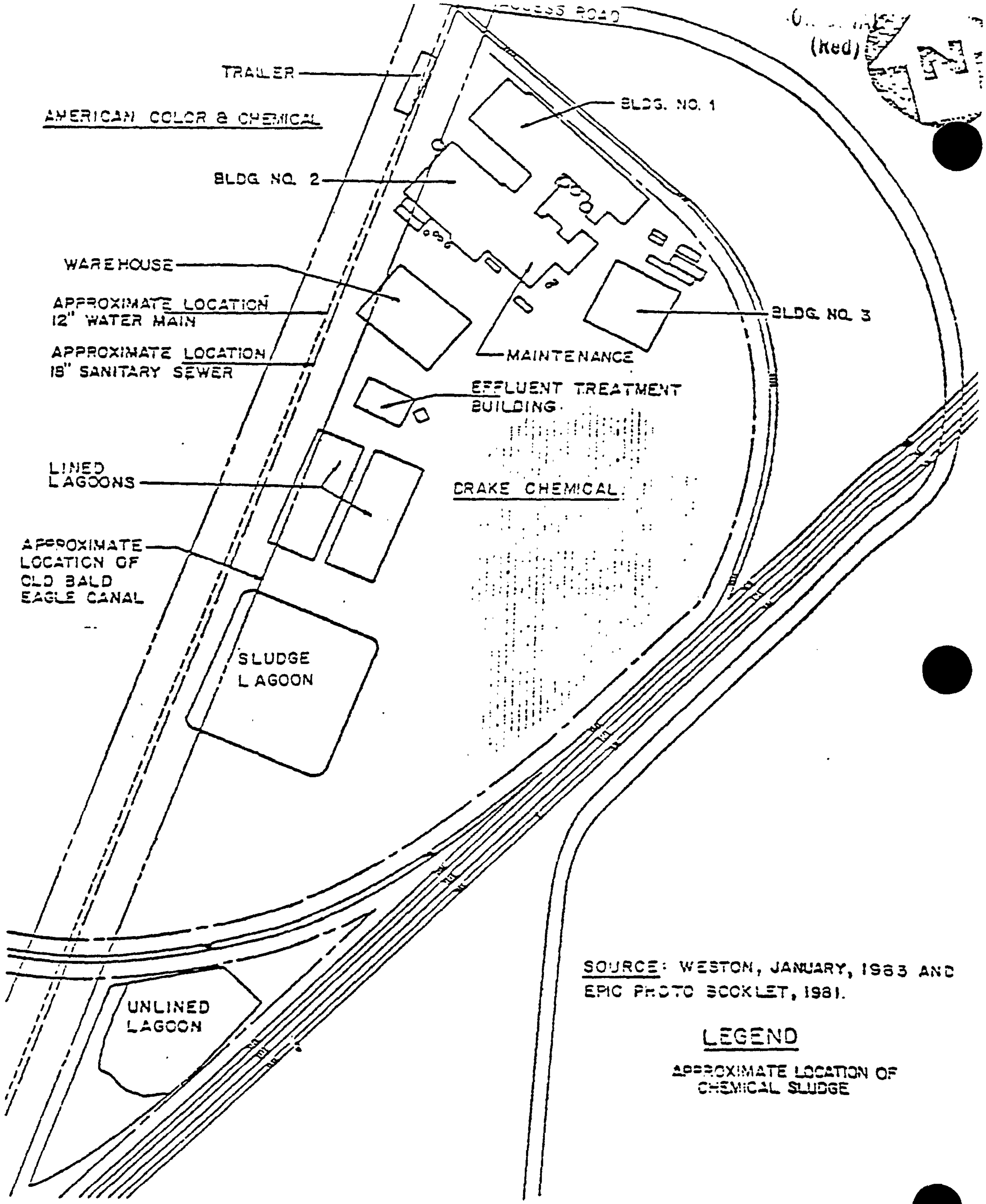
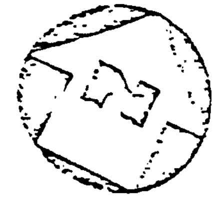


FIGURE 2

DRAKE CHEMICAL, INC. SITE MAP
LOCK HAVEN, CLINTON COUNTY, PA.

NOT TO SCALE



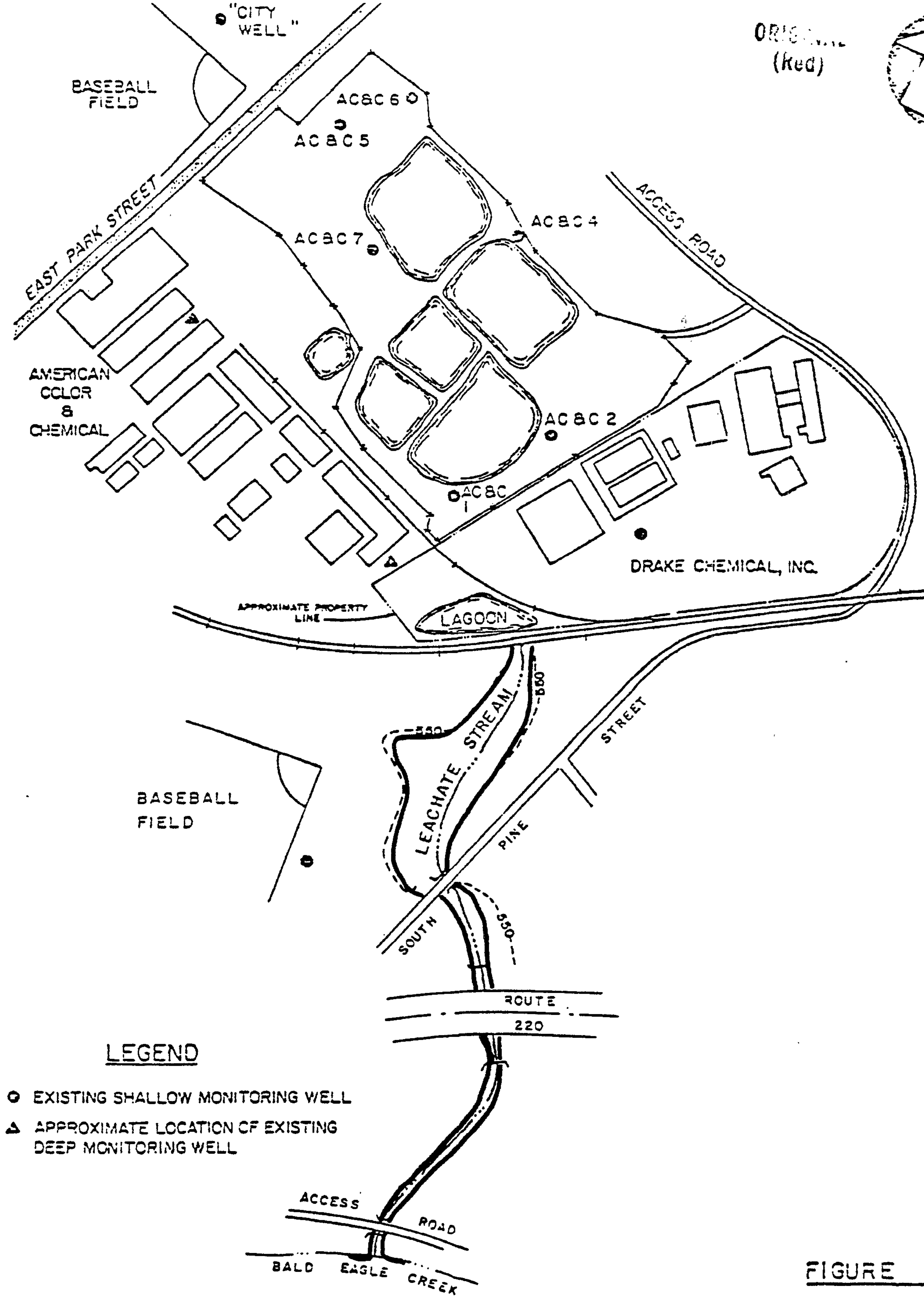


FIGURE 3

DRAKE CHEMICAL, INC. SITE VICINITY MAP
LOCK HAVEN, CLINTON COUNTY, PA.

NOT TO SCALE

required hand charging of chemicals into reactor vessels. The organic compound 2,3,6-trichlorophenylacetic acid (TCPAA), also known as the herbicide Fenac®, was manufactured at the plant and is a major site contaminant.

During the time of active production at the Drake Chemical facility, process wastewater and sludge were placed in the lagoon for storage on site. Overflow from the lagoon passed through a culvert, into the leachate stream and thence to Bald Eagle Creek. The overflow and leakage from this lagoon have transported hazardous waste to the tributary. However, the main source of streambed flow is from contaminated groundwater which surfaces at low areas along a part of the leachate stream.

Current Site Status

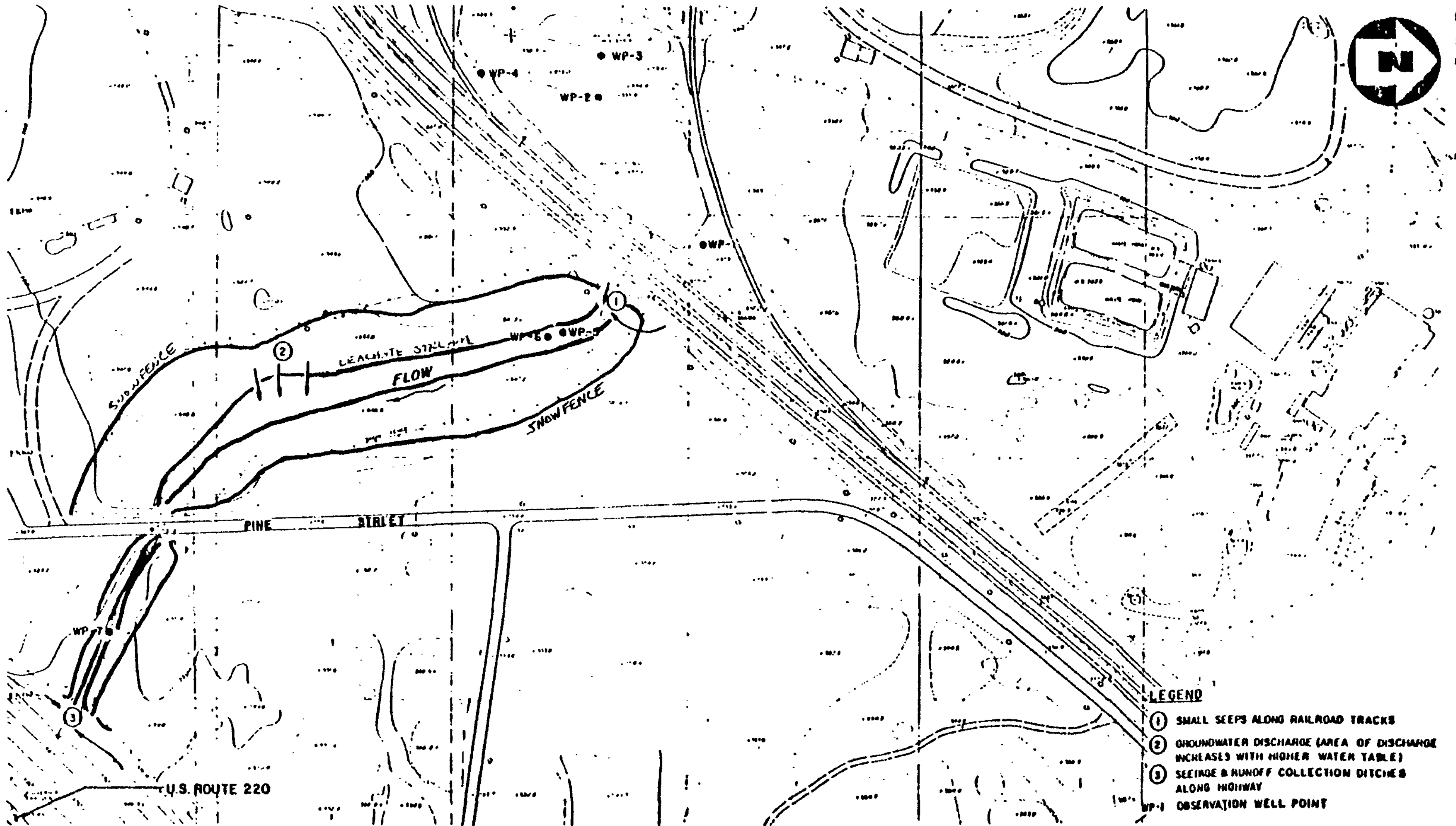
As stated above, the main source of the leachate stream is base flow derived from groundwater discharge. The main groundwater discharge area is located west of Highway 220, approximately halfway between Pine Street and the railroad tracks. The streambed west of Highway 220 varies in width between 10 and 25 feet and is devoid of vegetation. The primary sources of the stream during dry periods are: (Figure 4).

- Small seeps of less than 1 gpm at the base of the railroad tracks originating from the mound around the leachate lagoon.
- Surface runoff from wet areas west of Hammermill ballfield.
- Groundwater discharge along the stream.
- Highway 220 seeps and storm runoff.

East of Highway 220, the stream bed width decreases to about 2 feet in width at the base and is vegetated.

Stream flow which primarily originates east of Highway 220 flows through a culvert under the highway and into Castanea Township Park. The stream limits infiltration into the groundwater in this stretch during normal flow conditions due to the low hydraulic conductivity of the base of the stream bed. The stream, as well as groundwater in the township park, discharges into Bald Eagle Creek.

During March of 1982, the Environmental Response Team (ERT) of the EPA conducted an Extent of Contamination (EOC) study of the leachate stream area. The purpose of this study was to determine the degree and extent of hazard associated with toxic releases to the soil and surface waters from the Drake Chemical Site property.



NOTE: OBSERVATION WELL POINT WP-8 IS LOCATED IN CASTANEA TOWNSHIP PARK IN THE STREAM BED NEAR MW-MIIA & B.

FIGURE 4

MAIN SOURCES OF STREAM
DRAKE CHEMICAL, INC. SITE, LOCK HAVEN, PA
SCALE: 1" = 100'

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The investigation discovered contaminants in the leachate stream sediments and bank soils. These contaminants were:

	Contaminant	Level of Contamination
o	Trichlorophenylacetic Acid (all isomers)(TCPAA)(Fenac)	ND to 21,000 ppb
o	1,2-Dichlorobenzene and 1,4-Dichlorobenzene (DCB)	ND to 18,100 ppb
o	Dichloroaniline (all isomers)(DCA)	ND to 1,400 ppb
o	Nitrobenzene	ND to 360 ppb
o	Phenol	ND to 1,800 ppb
o	Nitrotoluene (all isomers)	ND to 1,770 ppb
o	Naphthol	ND to 3,200 ppb
o	2,4-Dichlorophenol (DCP)	ND to 210 ppb
o	4,6-Dinitro-o-Cresol	Unknown
o	Chloromethyl Aniline (all isomers)	Unknown
o	Methyl Nitroaniline (all isomers)	Unknown
o	Diethylene Glycol	Unknown

ND - Non-detectable
ppb - parts per billion

Surface and centerline depth distribution for Fenac is exhibited in Figure 5.

A Remedial Investigation of the site and surrounding area, under the sponsorship of the EPA (Superfund), was conducted from May 1983 to March 1984 to supplement the previous findings and to provide data to perform Feasibility Studies.

Exploratory borings were drilled and monitoring wells were installed in order (1) to define the geology of the underlying site in the context of contaminants being carried by surface water into deeper soil horizons and (2) to estimate the extent of contamination of deeper soils and groundwater beneath the site. Multilevel gas-driven sampler systems were used to obtain vertical head and contaminant distribution information. Well points placed along the streambed were also employed.

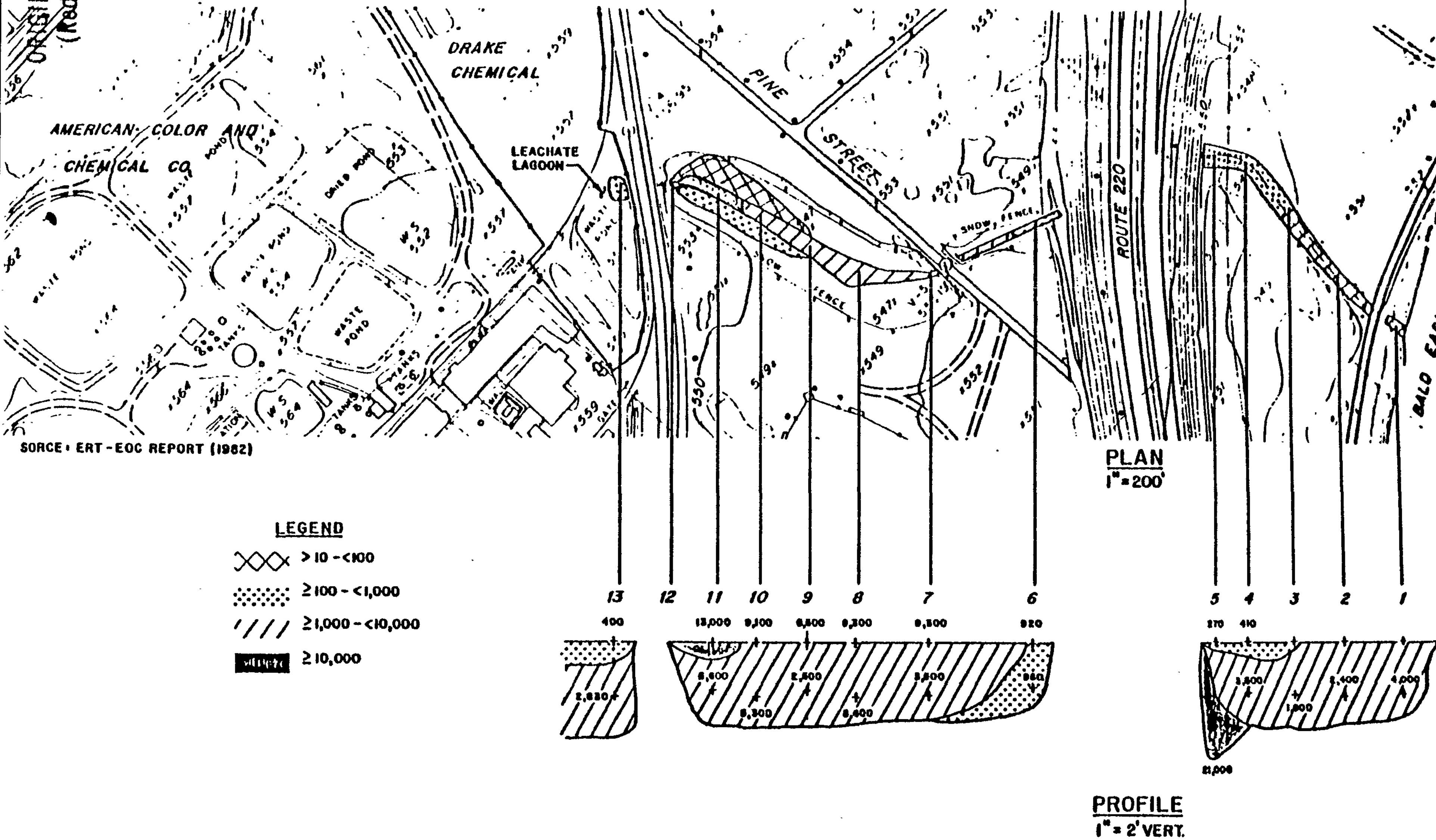

FIGURE 5

SURFACE AND CENTERLINE DEPH DISTRIBUTION OF FENAC (ppb)
DRAKE CHEMICAL, INC. SITE, LOCK HAVEN, PA
SCALE AS SHOWN

A sampling program was conducted to define the volume, extent, and characteristics of on-site and off-site contamination. Shallow hand-auger borings were performed to sample local soils and to assist in describing the shallow geology and hydrogeology. Surface water and sediment samples were collected to obtain information on the possibility of off-site migration of contamination.

An aquatic survey was performed to establish the impacts of possible water contamination upon the fish population. Similarly, a terrestrial survey established the impacts upon the surrounding plant life.

The groundwater samples were analyzed for priority pollutants, along with Fenac, TOH, TOC, sulfate, chloride, pH, conductivity, and ammonia. Figure 6 shows the locations of the monitoring wells.

Fenac was observed to be a good indicator of contamination at the site. Fenac was detected in the onsite wells at concentrations ranging from 2,300 to 57,000 micrograms per liter (ug/l) (parts per billion). Fenac concentration in the offsite monitoring wells ranged from nondetectable to 389 ug/l. Table 1 presents a list of other organics and inorganics detected both on-site and off-site.

The highest levels of contamination along the leachate stream were encountered near the origin of the stream. Analysis of samples in this area indicates that contamination is highest in the shallow sample and quality improves with depth. At the lower end of the stream, the contaminant analysis indicates a water quality slightly poorer than encountered in background sampling. The contaminant indicator Fenac was not encountered in a sample obtained from the confluence of the leachate stream and Bald Eagle Creek. The organic contaminant found was di-n-butyl phthalate, at a concentration of less than 10 ug/l.

The inorganic contaminants include:

Element	Concentration
aluminum	208 ug/l
barium	110 ug/l
cadmium	1 ug/l
iron	133 ug/l
manganese	240 ug/l
zinc	18 ug/l

During periods of elevated ground water conditions, and thus increased stream flow, the contaminants present in the shallow groundwater regime may be transferred to the leachate stream.

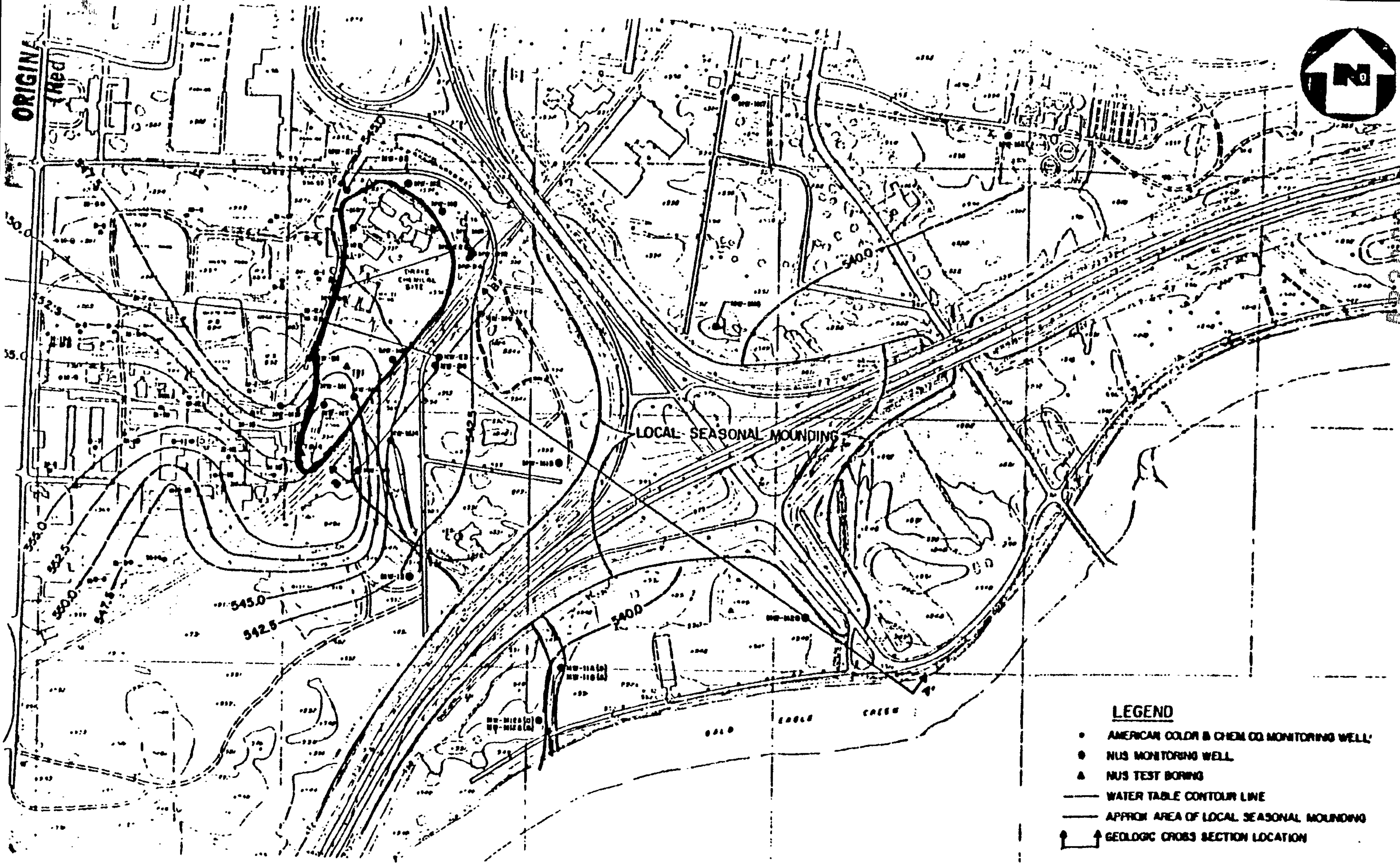

Figure 6

MONITORING WELL LOCATIONS, GROUNDWATER CONTOURS, CROSS SECTION LOCATIONS
DRAKE CHEMICAL, INC. SITE, LOCK HAVEN, PA
SCALE: 1" = 400'

TABLE 1

LIST OF GROUNDWATER CONTAMINANTS
DRAKE CHEMICAL SITE

Onsite		Offsite	
Inorganics	Organics	Inorganics	Organics
Aluminum	Bis(2-ethylhexyl)phthalate	Aluminum	Bis(2-ethylhexyl)phthalate
Ammonia	1,2-dichlorobenzene	Ammonia	1,2-dichlorobenzene
Arsenic	1,3-dichlorobenzene	Arsenic	1,4-dichlorobenzene
Barium	1,4-dichlorobenzene	Barium	Di-n-butyl phthalate
Beryllium	3,3'-dichlorobenzidine	Beryllium	Phenol
Cadmium	Nitrobenzene	Cadmium	Benzene
Chromium	1,2,4-Trichlorobenzene	Chromium	Chlorobenzene
Cobalt	2,4-dichlorophenol	Cobalt	Chloroform
Copper	2,4-dinitrophenol	Copper	1,2-dichloroethane
Cyanide	Pentachlorophenol	Iron	Methylene chloride
Iron	Phenol	Lead	Toluene
Lead	Benzene	Manganese	1,2-trans-dichloroethylene
Manganese	Chlorobenzene	Mercury	Acetone
Mercury	Chloroform	Nickel	O-xylene
Nickel	1,2-dichloroethane	Selenium	
Thallium	Ethylbenzene	Thallium	
Zinc	Methylene chloride	Zinc	
	O-xylene		

As part of the RI, one sediment sample was obtained from the leachate stream, near the conduit outlet on the southern side of U.S. Route 220. The results of the analysis of this sample are listed in Table 2. Previous sampling of the leachate stream was conducted by the EPA Environmental Response Team in 1982. The results of this sampling effort were used to estimate volumes of contaminated sediment.

It appears that Fenac can be used as an indicator of subsurface soil contamination. Where Fenac concentrations are elevated, other chemical concentrations are elevated. The opposite also seems to be true; that is, low concentrations of Fenac are accompanied by low concentrations of other chemicals.

Off-site surface soil samples did not contain detectable limits of Fenac. Only small amounts of organics and metals were found in selected samples.

Fenac was not detected in off-site samples except in the boring soils for the monitoring well at the head of the leachate stream, where the concentrations ranged from not detectable to 2,100 ug/kg.

A monitoring well installed 400 feet downstream from the head waters does not show soil contamination from Fenac. Table 3 shows analysis of subsurface soil indicators in and around the leachate stream.

Endangerment Assessment

Under a directive from the EPA, Region III FIT (NUS Corporation) investigated the toxicology of the chemicals at the site and prepared a Toxicological Impact Assessment of the leachate stream. In addition, the Drake Remedial Investigation report included a Health Risk Assessment section which, as with the FIT report, gave an assessment of the critical compounds found in the leachate stream and sediment.

The findings of the risk assessment indicate that the greatest risk of exposure, although relatively low, is posed by direct contact with dermally active or absorbent compounds present in the leachate area. Of secondary importance were risks posed by compounds that may be discharged into Bald Eagle Creek and accumulated by aquatic life. To date, significant impacts on aquatic life in Bald Eagle Creek due to the Drake Site have not been found. Although of less importance from the standpoint of exposure pathway significance, groundwater was found contaminated with highly toxic, carcinogenic compounds that may be significant to further evaluation of mitigative measures in the leachate stream area. Table 3 presents the critical compounds and the media in which they are found.

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TABLE 2

SEDIMENT CONTAMINANTS
LEACHATE STREAM
DRAKE CHEMICAL SITE

Organics	ug/l	Inorganics	ug/l
Fenac	2,140	Aluminum	25,800
Acenaphthylene	6	Arsenic	12.3
Anthracene	24	Barium	182
Benzo(a)anthracene	150	Beryllium	5.59
Benzo(k)fluoranthene	550	Cadmium	0.84
Bis(2-ethylhexyl)phthalate	600	Chromium	57.8
Butyl benzyl phthalate	310	Cobalt	38.0
Chrysene	180	Copper	212
Diethyl phthalate	280	Iron	43,100
Di-n-butyl phthalate	9,700	Lead	71.6
Di-n-octyl phthalate	130	Manganese	627
Fluoranthene	158	Mercury	0.109
Indeno(1,2,3-cd)pyrene	< 25	Nickel	100
N-nitrosodiphenylamine	41	Tin	< 13
Phenanthrene	120	Vanadium	60.0
Pyrene	150	Zinc	712
Pentachlorophenol	211		
1,1,1-trichloroethane	38		
PCB-1242	25		

< - Denotes less than.

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TABLE 3

CRITICAL COMPOUNDS DETECTED IN DRAKE
CHEMICAL SITE LEACHATE STREAM AREA (OFFSITE)

Compound	Media	Concentration Range
Fenac	Groundwater	ND – 389 µg/liter
	Subsurface Soils	<10 -- 2,100 µg/kg
	Surface Soils	<10 µg/kg (all samples)
	Surface Water	ND — 7 µg/liter
	Sediments	ND -- 2,140 µg/kg
	Sediments (EOC)	60 -- 13,000 µg/kg
	Surface Water (EOC)	ND -- 2,080 µg/liter
	Surface Soils (EOC)	ND — 810 µg/kg
Arsenic	Groundwater	19 -- 2,880 µg/liter
	Subsurface Soils	5 mg/kg (one sample)
	Surface Soils	10 mg/kg (one sample)
	Surface Water	<10 µg/liter (all samples)
	Sediments	5.44 — 14.0 mg/kg
Dichlorobenzene (Total)	Surface Water	ND (All samples)
	Sediments	ND -- 420 µg/kg (c)
	Surface Soils (EOC)	ND -- 7,320 µg/kg
	Sediments (EOC)	ND — 18,100 µ/kg
Pentachlororophenol	Groundwater	ND (all samples)
	Sediments	ND -- 211 µg/kg
	Subsurface Soil	ND — 4,400 µg/kg

ND = Not detected
c = corrected for lab blank
EOC = Data from ERT March 1982 Extent of Contamination Survey
< = Less than

Since direct contact with these chemicals poses the most serious threat to human health in this area, the following discussion is limited to those compounds found in the stream and its sediment.

Fenac is a persistant herbicide that has been classified as moderately toxic to humans, with an oral dose of 0.5 to 5 grams per kilogram of body weight. In laboratory experiments a dermal dosage of 3,160 mg/kg of body weight has proved fatal to 50 percent of exposed rabbits. The long-term chronic toxic effect of Fenac on humans is yet unknown. Fenac is a persistent compound and delayed effects from long-term exposure is a possibility.

Pentachlorophenol is a very toxic compound that may be absorbed through the skin and the gastrointestinal tract. The lethal dose for 50 percent of laboratory rats and hamsters is 50 and 168 mg/kg respectively. Dermal penetration is the most dangerous exposure pathway. Acute skin exposure may result in contact dermatitis, while extensive contact with this compound has resulted in persistant chloracne. Because of pentachlorophenol's presence in the leachate stream and because of its dermal absorbtion characteristics, there is a risk posed to persons using the recreational areas near the contamination.

Dichlorobenzenes were also found in high concentrations in the leachate sediment. The different isomers of this compound are moderately toxic via the inhalation and dermal route and may produce painful irritating effect to the skin and mucous membranes.

Comparison of concentrations of the above compounds with known criteria for those compounds are given in Table 4.

Enforcement

In April of 1979, a consent decree was signed between Drake Chemicals and the Pennsylvania Department of Environmental Resources concerning wastewater and sludge disposal at the site. In January of 1982, a Notice of Violation was issued by the State based on violations of the April 1979 consent decree. After Drake filed for liquidation under Chapter 7 of the Bankruptcy Act, EPA conducted emergency activities at the site. Notice letters concerning these emergency actions were sent to: Ernest Dion, President/ Owner Drake Chemicals Inc; American Color and Chemical Company and Mr. William Knect, the trustee for the bankrupt estate. No positive response was received so CERCLA funds were used in the cleanup.

In October of 1982, notice letters were again sent to the three potentially responsible parties informing them that a remedial investigation and feasibility study were about to be undertaken by EPA at Drake. Although American Color and Chemical met with EPA on the matter, no final settlement was reached.

Table 4

Compound	Concetration Range	WQC Human Health	WQC Freshwater	General Toxicity/ Exposure Route
Fenac (2,4,6 Di-chlorophenyl-acetic acid)	ND-21,000 ppb	None	None	Moderately acutely toxic via dermal exposure.
Pentachloro-phenol	ND-4,400 ppb	1,010 ppb (water/organisms)	55 ppb (acute) 3.2 ppb(chronic)	Very toxic via dermal or gastro-intestinal tract
Dichloro-benzene (all isomers)	ND-18,100 ppb	400 ppb (water/organisms) 2,600 ppb (organisms alone)	1,120 ppb (acute) 763 ppb (chronic)	Moderately toxic via inhalation and ambient water exposures.

In August of 1984, notice letters were issued to Ernest Dion and American Color and Chemical informing them that Phase I remediation was about to begin at Drake and offering them the opportunity to perform the needed actions. American Color and Chemical responded to EPA's notice letter on September 13, 1984. The company declined to undertake response action, maintaining that it was not responsible for leachate stream contamination. We will notify AC&C before initiating Phase III. The company may be interested in undertaking a portion of Phase III actions.

Conclusions

The following conclusions are based on the results of the RI, the EOC report, and the toxicological impact assessment:

- The primary source of water in the stream is probably due to groundwater seepage into the tributary. The majority of this influx probably occurs within the upper 400 feet of stream.

- The primary modes of environmental contaminant transport from the leachate stream are via surface and groundwater movement of suspended or dissolved contaminants.

- Data indicate that the highest contaminant concentrations of Fenac and other select chemicals are in the sediments.

- Surface soils in the area of the leachate stream in the public park appear to be relatively devoid of the contaminants found elsewhere. However, flood events can transport contaminants from the leachate stream onto the surrounding floodplain.

- Off-site surface water analyses indicate that there is presently little impact of leachate contamination on aquatic life and water quality in Bald Eagle Creek.

- Those persons subject to the greatest risk from the leachate stream are the local populations who may come into direct contact with the leachate or sediments.

ALTERNATIVES EVALUATION

The alternatives evaluated in the feasibility study are considered off-site measures as defined under 40 CFR Part 300.68 (e)(3).

Alternatives identified in the Feasibility Study have been developed in order to meet a set of site-specific remedial action objectives. For Phase 1 of the Drake Chemical Site these objectives are:

- To maintain the public health and safety. The leachate stream poses a threat to the public through possible contact with contaminated water and sediments. This threat can be decreased by removing the potential for exposure.

- To attempt to make the publicly-owned land safe for human access. The Castanea Township Park has been closed because of the presence of the leachate stream. Remedial action optimally should allow the park to be safely reopened for its former use.

- To develop remedial actions which are both technically feasible and cost-effective.

Numerous remedial alternatives are available for use at the Drake Chemical Site. Although many alternatives are applicable, it is apparent that a number of alternatives can be removed from consideration.

The scope of the Phase I Feasibility Study is limited to alternatives addressing the problems surrounding the leachate stream. Alternatives relating to source control and groundwater treatment were considered beyond the scope of study and therefore this ROD. The rationale for elimination of various alternatives is presented in Table 5. This screening is based on the information obtained during the RAMP, the Remedial Investigation and additional investigative efforts. These investigative tasks include:

- A site visit performed by the RSPO and NUS Project Engineer.

- Meetings with the RSPO and the NUS Project Engineer.

- Review of the site soil, rock, and groundwater conditions identified during the subsurface operations.

- Identification, review, and assessment of critical site engineering features, including culverts under roadways, bank slopes, elevations and stream profiles and gradients.

- Review of other Feasibility Studies using the types of alternatives considered for this site.

After completion of the initial screening of technologies, a detailed evaluation of alternatives was conducted in order to identify those alternatives that are most applicable for the disposal problems at the site. The cost-effective alternative is the lowest cost alternative that is technologically feasible and reliable and that effectively mitigates or minimizes damage to and provides adequate protection of public health, welfare, and the environment (National Contingency Plan).

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TABLE 5

ALTERNATIVES REMOVED FROM CONSIDERATION
DRAKE CHEMICAL SITE

Alternative	Rationale for Removal
Source control measures	Beyond the scope of the Phase I RI and FS. RI report does not address this aspect sufficiently.
Groundwater treatment	Beyond the scope of the Phase I RI and FS. Actions of this nature must be on a site-wide basis to be effective. The groundwater contamination is the subject of the Phase III report and study.
Groundwater barriers along stream, to prevent seepage.	The depth to an intact bedrock or boundary layer is unknown (>80 feet).
Collection drains for groundwater seepage	There is insufficient gradient in the upper streambed area for this system to function properly.
Porous covers, such as filling the channel with gravel, to reduce the potential for contact	During flood events, contaminated sediments may be backflushed through the media and deposited on the local floodplain.
Diversion systems	Not applicable.
In-situ treatment of sediments	Not feasible; sediments are prone to movement, additional contamination from groundwater is possible, and the water movement may flush out the treatment materials/chemicals.
Incineration of sediments	This will not remove the major inorganic/metal contamination; disposal alternatives will also be required.
Solidification	Not applicable.

The critical components of effectiveness measures were selected to be technical feasibility, public health, and institutional and environmental effects. Particular emphasis was placed on the following:

- Technical Feasibility:
  - Proven or experimental technology.
  - Risk of failure.
- Public health effects:
  - Reduction of health and environmental impacts.
  - Degree of cleanup.
- Institutional effects:
  - Legal requirements, institutional requirements.
  - Community impacts.
  - Effects upon land use.
- Environmental effects:
  - Impact of failure.
  - Length of time required for cleanup.
  - Amount of environmental contamination with respect to acceptable levels.

Based on these components, a set of independent "effectiveness measures" were developed, as follows:

- Technology Status.
- Risk and Effect of Failure.
- Level of Cleanup or Isolation Achievable.
- Ability to Minimize Community Impacts.
- Ability to Meet Relevant Public Health & Environmental Criteria.
- Ability to Meet Legal and Institutional Requirements.
- Time Required to Achieve Cleanup or Isolation.
- Acceptability of Land Use After Action.

No Action Alternative

In the Endangerment Assessment section, the risk of adverse health effects due to dermal exposure to, or ingestion of, Fenac, pentachlorophenol, or dichlorobenzenes was established. The No Action Alternative would allow the risk of public exposure to these chemicals to continue. Therefore, the No Action Alternative was removed from consideration.

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The technologies remaining after the initial screening process were grouped into two categories: site-related activities and disposal-related activities. The technologies remaining were:

- o Site-Related
  - Excavation for disposal
  - Granular or rockfill drainage system
  - Perforated conduit drainage system
  - Protective cover
  - Impermeable channel lining
  - Grading
  - Revegetation
- o Disposal-Related
  - Interim on-site landfill
  - Off-site landfill

These technologies were combined in the following logical groups that would be applicable to this site:

- o Excavate Sediment - Replace with an Impermeable Lining.
- o Construct Granular Drain - Cover to Elevation of Surrounding Land.
- o Construct Conduit Drain - Cover to Elevation of Surrounding Land.
- o Cover Stream - Provide for Surface Water Drainage.
- o Temporary On-site Disposal.
- o Off-site Disposal.

Description of Remedial Alternatives

Stream Remediation Alternatives:

1. Excavation of Contaminated Sediments - Replace with Impermeable Lining

In this alternative, the contaminated sediments in the streambed and on the banks will be excavated. Total removal of approximately 7,500 cubic yards of sediment is anticipated for this option in order to properly protect the public from direct contact in case of failure of the liner. The excavated area will be backfilled with a compacted clay, or a synthetic membrane/soil cover combination, to the original grades and contours. The purpose is to reduce groundwater seepage into the channel. The lining will extend up the embankments beyond the point of seepage anticipated during high groundwater conditions.

2. <u>Construct Granular Drain - Cover to Elevation of Surrounding Land</u>

For this alternative, a rockfill drain enveloped in filter fabric will be placed in the existing stream channel. Inlet and outlet structures will be constructed to connect the drain with the existing conduit and to provide inlets for surface water runoff. The drain will be covered with soil to protect the drain and promote surface water management. Since the contaminated sediments will be effectively covered to eliminate the risk of public contact, only the volume of contaminated soils needed to construct the drain properly will be removed. An estimated 2,000 cubic yards of clean rockfill and 6,000 square yards of filter fabric will be required for construction. In addition, 12,000 cubic yards of native soils will be required as cover material.

The enclosed drain and cover will reduce exposure of the public by contaminated sediments and water flow. The filter fabric retards the movement of the sediments by permitting only the water to pass.

3. <u>Construct Conduit Drain - Cover to Elevation of Surrounding Land</u>

This alternative calls for a reinforced concrete or corrugated metal perforated or slotted conduit drainage system to be installed to replace the stream. The pipe will be in a gravel bed, which will be constructed using filter design criteria to reduce the movement and piping of the sediments. The drain will be covered with native soils for protection. Only those soils necessary to perform the proper engineering will be excavated. Approximately 1,300 linear feet of conduit will be required, along with 4,500 cubic yards of granular material. 12,000 cubic yards of natural soils are required for use as a cover. The enclosed drain and cover will reduce exposure of the public to contaminated sediments and water flow. The gravel filter will retard the movement of the sediments.

4. <u>Cover Stream - Provide for Surface Water Drainage</u>

This alternative is a modification of the previous alternative using a conduit drain to replace the open channel. The conduit drain would be used to transport surface water from catch basins installed between Pine Street and Bald Eagle Creek. The streambed between the railroad embankment and Pine Street would be covered with soil. This soil cover will reduce the risk of groundwater reaching the surface in this area. A granular drain will be installed along the toe of the railroad embankment in order to collect the seepage so that it does not appear as surface runoff. This option will be reevaluated in Phase II to conform with the selected alternative for the 82,000 cubic yards still on-site.

The construction of this alternative will require approximately 900 linear feet of conduit and 3,100 cubic yards of granular material. Slightly more than 200 cubic yards of contaminated sediment must be excavated to install the conduit properly. Approximately 12,000 cubic yards of natural soils are required for use as a cover, and 1,000 cubic yards of granular material will be necessary for the gravel bed.

Disposal Alternatives:

1. Temporary On-site Disposal

This alternative provides for the construciton of a temporary on-site hazardous waste disposal facility. This facility would be used for the temporary disposal of contaminated materials located in the stream. The facility will be designed to adequately control the hazardous waste on a temporary basis until the site proper is remediated in Phase II. Such a facility would include a single impervious liner for leachate migration control, a cover to decrease surface rainfall infiltration, and runoff control system. The proposed on-site disposal area will be designed to contain the wastes from contaminated soil excavation and from the surface debris.

The on-site facility will be designed to adequately control the sediments until the method of ultimate disposal, determined during Phase II, is implemented.

2. Off-site Disposal

Off-site disposal involves loading excavated soils onto trucks and transporting this material to a secure waste disposal facility. These wastes are defined as hazardous waste; thus adequate shipment and disposal precautions will be required. The soils and debris will be transported using 20-ton dump trucks.

Manifests will be required for the transportation of hazardous wastes. Other permits or permissions that may be considered include possible local requirements and site access (from owners).

Costs:

The costs of each alternative have been estimated based on construction rates and treatment prices characteristic of the area. A total cost is given for each alternative, along with a breakdown of capital versus operation and maintenance (O&M) costs (see the Alternatives Matrix).

Community Relations

The Draft Feasibility Study was made available for public comment between August 21 and September 11, 1984. Copies of the

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ALTERNATIVES MATRIX FOR DRAKE - PHASE I

A. Stream Remediation Activities	Capital ($K)	Present Worth O&M ($K)	Present Worth Total ($K)	Public Health Considerations	Environmental Considerations	Technical Considerations	Public Comment
1. Excavate sediments - replace with impermeable lining				Eliminates direct contact. Eliminates point-source contaminated discharge to creek.	Minimizes contaminated soil left in place. Leaves stream channel intact.	Surface drainage and failure of liner need to be considered.	Unacceptable
- clay liner	273	9.4	283				
- synthetic membrane	267	9.4	277				
2. Construct granular drain, cover to elevation of surrounding land	313	9.4	322	Eliminates direct contact.	Contaminated soil left in place. Seepage may travel to creek through drain.	Filter drain may clog.	No comment
3. Construct slotted conduit drain, cover to elevation of surrounding land	502	9.4	512	Eliminates direct contact.	Contaminated soil left in place. Possible increase of contaminated discharge to Bald Eagle Creek	Possible clogging of perforated drain surrounding conduit	No comment
4. Cover stream - provide for surface water drainage	445	9.4	455	Eliminates direct contact. Eliminates point-source contaminated discharge to creek	Contaminated soil left in place in upper reach. (To be reevaluated in Phase II.) Sediment excavations needed in lower creek	Surface drainage pattern to prevent erosion of cap needs to be considered in design	Acceptable

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ALTERNATIVES MATRIX FOR DRAKE - PHASE I

B. Disposal Activities	Capital ($K)	Present Worth O&M ($K)	Present Worth Total ($K)	Public Health Considerations	Environmental Considerations	Technical Considerations	Public Comment
1. Dispose of sediments in temporary facility on-site - Maximum Removal	600	0	600	Eliminates direct contact by moving soils to secure non-accessible on-site area	Temporary facility within 100 year flood plain	Lined, covered, bermed, temporary storage for approximately 7500 cy	No comment
2. Dispose of sediments in temporary facility on-site - Minimum Removal	44	0	44	Eliminates direct contact by moving soils to secure non-accessible on-site area	Temporary facility within 100 year flood plain	Can use existing on-site lined lagoons for temporary storage	Acceptable
3. Dispose of sediments in approved off-site landfill - Maximum Removal	2,324	0	2,324	Eliminates direct contact by transporting soils out of region	Consideration of RCRA and DOT regulations for transport needed	Transport and disposal of 7500 cy	Unacceptable
4. Dispose of sediments in approved off-site landfill - Minimum Removal	93	0	93	Eliminates direct contact by transporting soils out of region	Consideration of RCRA and DOT regulations for transport needed	Transport and disposal of 300 cy	Unacceptable

document were placed in repositories in the Lock Haven area. A notice was placed in the local newspaper regarding the availability of the Feasibility Study Report for public review, and to announce that a public meeting was scheduled for September 6, 1984. The meeting was held at Lock Haven University Ulmer Planetarium and was attended by representatives of EPA, the Pennsylvania Department of Environmental Resources, the NUS Corporation, the City of Lock Haven, the County of Clinton, the Pennsylvnia Health Department, Citizens and Laborers for Environmental Action Now (CLEAN), and local concerned citizens.

For the most part, comments received from the public at the meeting were of a general nature. Some questions were raised over the actual starting date of construction of Phase I and the timing of the Phase II portion of the project. Meetings were held before the public meeting with Township and County officials, and the local citizens group (CLEAN) was briefed on the remedial alternatives. The citizens group strongly recommended an alternative that provides for as little soil and sediment removal as possible but still provided for adequate protection of the public from a direct contact threat. Comments and questions from these meetings along with all other comments are attached as part of the Responsiveness Summary found attached to this document.

Recommended Alternative

Section 300.68(j) of the National Contingency Plan (NCP) [47 FR 31180; July 16, 1982] states that the appropriate extent of remedy shall be determined by the lead agency's selection of the remedial alternative which the agency determines is cost-effective (i.e. the lowest cost alternative that is technically feasible and reliable) and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare and the environment. Based on our evaluation of the cost-effectiveness of each of the proposed alternatives, the comments received from the public, information from the Feasibility Study and information from the Pennsylvania Department of Environmental Resources, we recommend that the "Cover Stream - Provide for Surface Water Drainage" alternative combined with the "Temporary On-Site Disposal" alternative be implemented. This alternative includes: covering the upper reach of the leachate stream with soil to the contours of the surrounding land; placing a conduit in the lower reach of the leachate stream to facilitate surface water runoff from fields and highways, and covering the pipe with soil; placing a French drain at the toe of the railroad embankment to prevent seepage from the perched water table; excavation of only enough sediment in the lower reach for engineering purposes; temporary storage of this excavated sediment on the Drake Chemical site in an approvable manner.

The recommended alternative is the least cost alternative that is technically feasible and reliable, and which effectively mitigates and minimizes damage to and provides adequate protection of the public health, welfare and the environment. The recommended alternative will satisfy all the objectives developed for Phase I of the Drake Project. The alternative will (1) decrease the threat to public health and safety by effectively removing the direct contact threat posed by the leachate stream, (2) allow the Castanea Public Park to re-open for recreational use by the public, and (3) be both technically feasible and cost-effective.

It should be emphasized that the recommended alternative may prove to be an interim measure which addresses the threat of direct contact with the contaminated sediments. This alternative calls for leaving in place and covering some of the contaminated sediments, especially in the upper reach of the leachate stream. The final solution for the leachate stream area will be presented in Phase II when the on-site contamination is addressed. Should re-excavation of the stream channel be necessary , the additional volume involved would be small when compared to the volume of materials to be dealt with in Phase II.

Any contaminated sediments left in place that may come in contact with groundwater will be of little significance at this time because of the already grossly contaminated condition of the groundwater in the region. Because of this highly contaminated condition of the aquifer, it is doubtful that any remedial action taken on the groundwater in the future will restore the aquifer to a pristine, potable condition. However, if groundwater could be returned to a potable state and could be used as a drinking water source in the area, it is believed that the sediment for now left in the leachate stream would have a minor impact on the regional groundwater scheme due to the binding nature of the compounds to the soils and sediments, the low permeability of the soils along the streambed, and the relatively insoluble nature of the stream contaminants. These assumptions are supported empirically by the very low concentrations of Fenac in the groundwater in the lower reach of the leachate stream where contamination would come mainly from contaminants leaching from the stream sediments into the groundwater. Again, the question of leaving contaminated sediments in place will be addressed more fully in the subsequent feasibility studies.

This option would eliminate the risk of public exposure to the contaminated sediments by filling in the stream channel with natural soils up to the contours of the surrounding land. A clay cap of the filled leachate channel along with proper grading will prevent rainfall infiltration and regional surface water flow from recreating the channel path. When the depressional area is removed, the groundwater will not surface but will remain in the regional groundwater flow and eventually discharge, as all groundwater does, into Bald Eagle Creek. Again, it is emphasized that there is no private or public use of the groundwater in the Lock Haven area. In addition, any future use of the aquifer is unlikely due to a local ordinance which requires all establishments to hook up to the Lock Haven Water System for their potable needs.

The greatest risk of failure in this system is clogging of the conduit in the lower reach of the leachate stream. Even if this should occur, recontamination of the area will not take place since the conduit will only handle non-contaminated surface water.

The following regulations will be considered during the stream remediation portion of this alternative:

- Regulations governing remedial actions in a floodplain.
- State leachate control regulations.
- State stream encroachment regulations.
- Groundwater manipulation regulations.
- Local hauling, grading, and runoff permits.
- Corps of Engineers regulations regarding filling of stream channels.

In the disposal portion of the recommended alternative, the on-site facility will be designed to control the sediments adequately until the method of ultimate disposal, determined during Phase II, is implemented. This may require variations to the regulations governing the storage of waste. This is detailed in the "Consistency with Other Environmental Laws" section of this document.

Depending on their capacity and structural integrity, existing lined wastewater lagoons already on the site may be used to store the excavated soils and sediments. These lagoons would be modified to include a cover to decrease surface rainfall infiltration and to provide for a runoff control system.

Any soils placed on-site for temporary storage will be addressed in the Phase II portion of this project. Phase II must develop alternatives which will address an estimated 82,000 cubic yards of contaminated soils and sludges that exist on-site. Since the Phase I sediments will total approximately 300 cubic yards, the technical and cost control effect of temporary storage is barely significant. Another advantage to addressing the soil contaminants in Phase II is that it provides for a consistent approach to remediation of all contaminated soils, sediments or sludges for both Phase I and Phase II.

Alternatives Not Selected

The "Excavate Sediments - Replace with an Impermeable Liner" alternative appears to be lower in cost; however, coupled with the disposal option for total sediments, the cost for this alternative is estimated at $2,650,000. Additionally, failure of the channel lining by natural or mechanical reasons will result in a recontamination of the stream channel through influx of contaminated ground water.

The "Granular Drain" option cost also appears lower when isolated as a stream remediation alternative. However, this option would require a greater volume of excavated materials (7500 cubic yards as opposed to 300 cubic yards for the recommended alternative) which will increase the disposal costs. In addition, this alternative has the greatest chance for failure due to clogging of the granular material. This option will not reduce the flow of contaminated groundwater into Bald Eagle Creek.

As with the granular drain option, the conduit drain would require additional excavation of contaminated materials. Any failure of the drainage system, by clogging of the conduit, will result in back-up of contaminated water at the inlets to the system.

There is a lower risk to the local community associated with the off-site disposal option as compared to temporary on-site disposal, provided that the contaminated material is properly loaded onto the hauling trucks. In the event that some hazardous material remains or is spilled during loading, continued environmental contamination may occur. Another risk involves the long-distance transport of the material. In the event of a vehicle accident during transport, the hazardous material may be dumped onto the ground. Of course, another disadvantage to the off-site disposal option is that hazardous waste is not chemically or physically altered, only transferred from one community to another. The off-site disposal option is also considerably more expensive than the on-site disposal option.

Cost of Recommended Alternative

The capital cost of the recommended stream remediation alternative is estimated to be $445,311. The temporary on-site disposal alternative with minimum sediment removal is estimated to be $44,014. The Corps of Engineers' cost for oversight on construction work based on 7% of the remedial action cost is estimated at $34,300. Cost of design is estimated to be $75,000. The total construction cost for Phase I is $523,625 and the total for Phase I, including design, is $598,625.

Consistency with Other Environmental Laws

Since excavation of some contaminated materials is necessary for all the stream remediation alternatives evaluated, disposal alternatives must be part of the overall remedial action. The off-site disposal alternative would fully comply with all applicable environmental laws. On-site activities are not legally required to comply with otherwise applicable environmental laws, but EPA's policy is to meet substantive requirements nonetheless, with limited exceptions. The temporary on-site storage area is not required to meet RCRA landfill specifications because it is an interim measure. The Phase I excavated materials will be placed into a secure environment with appropriate safeguards, and the storage will be temporary (addressed in Phase II). The temporary storage area will be lined and capped, and provisions will be made to divert surface runoff away from the cap. The inconsistencies with RCRA are that the temporary storage is on the Drake site which is also within the 100-year floodplain. In addition, a RCRA monitoring well plan will not be used for this facility.

The on-site storage of contaminants will be addressed with other on-site contamination within 6-8 months after its disposal. The probability a 100-year flood event occuring during this interval is less than 1 percent. In addition, if a flood event should occur during this period, the potential contamination from the approximately 82,000 cubic yards of chemical soils and sludges already existing on-site make the 300 additional cubic-yards to be stored relatively insignificant. Finally, the stored soil will be isolated by a liner and cap system, mitigating concerns of effects from flooding.

There are 30 monitoring wells in the area that were drilled during the remedial investigation. However, these wells may not meet RCRA regulatory requirements for groundwater monitoring at storage facilities. Since the groundwater flowing beneath the site is grossly contaminated it would be nearly impossible to detect leakage from the storage facility into the aquifer.

This alternative does include many RCRA requirements such as: a liner to prevent leakage of contaminants; a surface cap to reduce rainwater influx, and grading and excavation to facilitate surface water flow into a surface water drainage system.

In the stream remediation alternative, contaminated soils and sediments will be left in place, covered with natural soils and a clay cap, graded and reseeded. The concern here is that the sediments will remain within the 100 year floodplain, albeit possibly for only a short duration (less than 1 year). This option can be reevaluated and, if necessary, made to conform with the Phase II decision regarding the remedial alternative which addresses the contaminated soils and sludges located on the site. The proposed Phase I remedial action will not alter floodstages or substantially impact the floodplain, because measures will be taken in order to not disrupt surface runoff in the vicinity of the leachate stream. A floodplain assesment will be conducted as part of the feasibility study for Phase II.

<u>Operation and Maintainance</u>

The operation and maintenance associated with the recommended alternative is limited to semi-annual inspections over a thirty year period (unless circumstances are changed in Phase II). Any excavated material will be stored on-site and addresed in Phase II and therefore subject to whatever the operation and maintenance requirements will be for the chosen alternative in that phase.

If the integrity of the construction should deteriorate in the future, the State would be responsible for repairs and upkeep. However, operation and maintenance costs associated with the drainage system and the streambed cover are not presented, since these items cannot be adequately estimated at this time.

The cost for Phase I O&M is the present worth of a visual inspection of the area on a semi-annual basis for 30 years. The assumption is 10 percent interest and 0 percent inflation over this period. The total O&M costs for this alternative is estimated to be $9,427. If EPA is to provide for the first six months of operation and maintainance, this would only be one inspection costing approximately $200 (until the implementation of Phase II).

Project Scedule

-	Approve Remedial Action	October 1, 1984
-	Start Design	December 1, 1984
-	Complete Design	March 1, 1985
-	Award Construction Contract	June 1, 1985
-	Start Construction	June 15, 1985
-	Complete Construction	September 15, 1985

Proposed Action

We request your approval of the recommended remedial alternative as described above. This action will complete construction for Phase I of the Drake Superfund Project. The estimated total cost of design and construction for this federal lead project is $600,000.

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RESPONSIVENESS SUMMARY
DRAKE CHEMICAL FEASIBILITY STUDY
PHASE I/LEACHATE STREAM AREA

The EPA and the PADER held three meetings on September 6, 1984, in order to outline Phase I of the Drake Chemical site and accept comments on the feasibility study. Attending the meetings were Tom Voltaggio, Bill Hagel, Ray Germann and Joe Donovan from EPA, Rich Ninesteel and Ann Cardinal from NUS, Dick Bittle and Tony Caputo from DER, and the Pa. Department of Health.

Meeting No. 1 - Public officials briefing at Lock Haven City Hall. Attending the meeting were Lock Haven City Council members and the City's Director of Public Works, Clinton County Commissioners, and various local officials. The meeting began at 1 p.m. and ended at 3 p.m.

Citizen Concerns and EPA Responses

Concern - No heavy metal analyses were performed on fish tissue in the aquatic survey. Al Hoberman, City Councilman, wanted to know if we planned to do so in the future.

Response - Only FENAC was analyzed in fish tissue because the fillets were too small for extensive analysis. FENAC was chosen because of its abundance in the leachate stream. Further testing is possible, but will require a funding/scope increase in the Drake budget. We will look further into the matter.

Concern - Rich Ardner, Director of Public Works, said EPA should consider the proposed Flood Control Project on our design of the alternative. The area of the leachate stream is a proposed ponding area in the initial plans of the U.S. Army Corps of Engineers, Baltimore District. This issue was also raised in a letter from Robert Yowell, Program Director for the Flood Protection Planning Board.

Response - Because the Army Corps of Engineers will be working on both design projects, we will recommend that the district offices coordinate on the two designs.

General Comments - The local officials seem to favor the "Cover Stream", which provides for surface water drainage with temporary on-site storage.

Meeting No. 2 - Citizens and Laborers for Environmental Action Now briefing was held at CLEAN headquarters, Lock Haven. Attending the meeting were Frank Furl and Chris Clemens from CLEAN, along with five other CLEAN members. The meeting began at 3 p.m. and ended at 5:45 p.m.

Citizen Concerns and EPA Responses

Concern - A question was raised by Frank Furl, President of CLEAN, on whether the leachate stream was a man-made stream or a natural stream, which would fall under the auspices of the Pennsylvania Clean Streams Act.

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Response - Dick Bittle of Pa. DER, Williamsport, stated that all indications are that the stream channal is man-made and not subject to any permitting.

Concern - Furl said that he was concerned about the location and status of old utility pipes buried near the leachate stream area.

Response - Before any construction begins, most likely in the design phase, city engineers will be consulted as to any utility pipes in the area.

Concern - There was concern about sludge running off-site during heavy rainfall periods and if this would be addressed.

Response - Bill Hagel stated that the Phase II remedial action will be flexible enough to extend beyond the immediate borders of the site and address any runoff.

Concern - Dichlorobenzidine was found in one sample upstream from the leachate stream discharge into Bald Eagle Creek. Chris Clemens of CLEAN said that it may be coming from periodic releases from an old AC&C discharge pipe in that area.

Response - The state, which is coordinating the AC&C RCRA closure plan, will investigate this incident.

Concern - It was called to our attention that a former waste disposal area, now covered by Route 220, may exist in the area of the leachate stream.

Response - NUS and the state will conduct a record search to find evidence ot the disposal area, however, this would not affect remedial activities in Phase I.

Concern - CLEAN requested that an expected life and usefulness of each alternative be included in the Feasibility Study.

Response - NUS will do this and it will be part of the final Feasibility Study.

Concern - CLEAN recommended that the entire area between the railroad embankment and Route 220 be filled in and regraded to prevent flooding in that area.

Response - This action would be beyond the scope of Phase I. The area in question is a naturally swampy area and it is felt that during high water situations some ponding will occur. Regrading of this area will just relocate the ponding, probably in the Hammermill Ballfield area. Since ponding is from groundwater surfacing, this will be addressed in the Phase III portion of the Drake project.

Concern - CLEAN suggested that if temporary storage is implemented, we should consider using the existing lined wastewater lagoons on the Drake site in lieu of creating a new storage facility.

Response - NUS will check the storage capacity of the lagoons and their structural integrity. This suggestion will be explored further in the conceptual design.

Concern - There was some confusion over the nature of groundwater flow in the area.

Response - Bill Hagel drew a diagram showing the natural flow as N.E., toward the West Branch of the Susquehana, and some variations near a perched water table in the leachate lagoon. CLEAN said that the explanation coincided with their ideas on groundwater movement.

Concern - CLEAN was concerned about several inconclusive samples returned from EPA lab contractor. Frank Furl questioned how EPA can formulate a feasibility study without "complete data".

Response - Bill Hagel and Rich Ninesteel explained that such samples are not reanalyzed because previously gathered data along with quality assured samples from the Phase I remedial investigation provided enough information to formulate remedial alternatives.

Meeting No. 3 - The fourth public meeting on remedial measures at the site. The meeting was held at Ulmer Planetarium, Lock Haven University, beginning at 7:15 p.m. and ending at 8:20 p.m. Approximately 26 people attended the meeting including EPA, DER and NUS. Media coverage included 2 newspapers, 1 television station and 2 radio stations.

Citizens Concerns and EPA Responses

Concern - Questions from the public meeting were not major. They included timetable information; start-up of Phase I (actual construction); release of the Phase II report and the possibility that we will be moving sediment from the leachate stream twice, once during Phase I and once during Phase II.

Response - All scheduling information given. It is possible that we will be moving soil twice but when you consider on-site volume of 82,000 cubic yards, the 300 cubic yards for Phase I becomes insignificant. Dealing with all the sediment in Phase II also provides for a more consistent approach to contaminated sediment remediation over the entire project.

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Record of Decision
Remedial Action Alternative Selection

Site: Drake Chemical Site (Phase II), Lock Haven, Clinton County, Pennsylvania

Documents Reviewed:

The underlying technical information, unless otherwise specified, used for analysis of cost-effectiveness and feasibility of remedial alteratives is included in the following documents and project correspondence. I have been briefed by my staff of their contents, and they form the principal basis for my decision of the appropriate extent of remedial action.

- "Remedial Investigation Report" - Phase II (Draft), Drake Chemical Site, Lock Haven, Clinton County, Pennsylvania. (NUS Corporation, January 1985, Revised April 1985)

- "Feasibility Study of Alternatives - Phase II Building and Contaminated Structures" (Draft) - Drake Chemical Site, Lock Haven, Clinton County, Pennsylvania (NUS Corporation, March 1986)

- Recommendations by the Pennsylvania Department of Environmental Resources.

- Staff summaries and recommendations, including the attached "Summary of Remedial Alternative Selection, Drake Chemical Site (Phase II)

Description of Selected Remedy:

- Drain and remove two lined wastewater treatment lagoons. Treat drained liquid and sludge in an offsite RCRA-permitted treatment facility.

- Remove all tanks, buildings and debris. Decontaminate all metal structures that can be salvaged as scrap. Any material not decontaminated will be transported and disposed of in a RCRA-permitted landfill. Any liquids removed will go to a RCRA-permitted treatment facility.

- Incineration of chemicals stored in warehouse in an offsite RCRA-permitted incinerator.

- Analysis and disposal (if needed) of the decontamination fluid in a RCRA-permitted facility.

Operation and Maintenance:

No operation and maintenance is necessary for this phase of the Drake Superfund Project. This is an interim phase to the ultimate remedy.

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Declaration:

Consistent with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the National Contingency Plan (40 CFR Part 300), I have determined that the remedial actions described above constitutes a cost-effective remedy which mitigates and minimized damage to the public health, welfare and the environment. The remedial action will be designed to minimize any temporary inconveniences to the local population during the construction phase.

The State of Pennsylvania has been consulted and agrees with the approved remedy. No operation and maintenance is required for this phase of the project.

I have determined that the action being taken is appropriate when balanced against the availability of Trust Fund monies for use at other sites.

Date

James M. Seif
Regional Administrator
EPA Region III